

OP/5  
File Copy

SMITHSONIAN INSTITUTION  
MUSEUM PROGRAMS AND RELATED RESEARCH  
(SPECIAL FOREIGN CURRENCY PROGRAM)

Submitted as a supplement  
to the FY 1986 budget

January 1985



SMITHSONIAN INSTITUTION  
MUSEUM PROGRAMS AND RELATED RESEARCH  
(SPECIAL FOREIGN CURRENCY PROGRAM)

PROGRAM PURPOSES AND LIST OF GRANTS

CONTENTS

Page	1	Introduction
	1	The Global Nature of the Smithsonian's Charter
	2	The FY 1986 Appropriation Request
	2	Special Foreign Currency Program Appropriation and the U.S. Taxpayer
	2	Program of Grants for Research
	3	The Importance of Research in the Natural Sciences and Cultural History
	4	The Importance of Multi-year Grants
	4	Benefits to United States Institutions
	5	Scientific Review Under the Smithsonian Program
	6	The Importance to the Smithsonian of Awards for Research
	6	Forward-Funded Reserve for the American Institute of Indian Studies
	7	International Effort to Salvage Moenjodaro
		Charts:
	9	Summary of Obligations, Actual and Estimated FY 1984, FY 1985, and FY 1986 - By Program Area and Country
	10	Actual Obligations FY 1984 - By Program Area and by Country
	11	Estimated Obligations FY 1985 - By Program Area and by Country
	12	Estimated Obligations FY 1986 - By Program Area and by Country
	13	Status of Smithsonian Funds FY 1984, FY 1985, and FY 1986

14 List of Grants:

- 14 Archeology and Related Disciplines
- 24 Systematic and Environmental Biology
- 30 Astrophysics and Earth Sciences
- 32 Museum Programs
- 34 SFCP Grants Administration
- 36 Science Information Program for Translations

MUSEUM PROGRAMS AND RELATED RESEARCH  
(SPECIAL FOREIGN CURRENCY PROGRAM)

PROGRAM PURPOSES AND LIST OF GRANTS

INTRODUCTION

The Smithsonian Institution's Special Foreign Currency Program makes grants in United States-owned foreign currencies to United States institutions, including the Smithsonian itself, to conduct research projects in the so-called "excess" foreign currency countries. In FY 1984, the excess foreign currency countries were Burma, Guinea, India, and Pakistan. In FY 1985, Poland was added to the list of excess currency countries and the Treasury Department has announced that as of FY 1986, the Indian rupee excess currency account will be depleted. The Smithsonian program supports research in Archeology and Related Disciplines, Systematic and Environmental Biology, Astrophysics and Earth Sciences, and Museum Programs.

The Smithsonian Foreign Currency Program awards grants when applicants have fulfilled three requirements. These are: 1) the favorable recommendation by a national advisory council of qualified scholars; 2) the concurrence of the appropriate American embassy and host government overseas; and 3) the completion of appropriate cooperative arrangements with host country institutions.

This supplement to the Institution's FY 1986 appropriation request describes: 1) the Smithsonian Foreign Currency Program within the context of the basic Smithsonian purpose; 2) some of the program's achievements; 3) its goals for FY 1986, and 4) projects for which obligations were incurred during FY 1984.

THE GLOBAL NATURE OF THE SMITHSONIAN'S CHARTER

The purpose of the Smithsonian Institution is "the increase and diffusion of knowledge." This quotation from the will of its founder, James Smithson, was made part of the Institution's enabling legislation enacted by the Congress in 1846, chartering the Institution and leading to the eventual designation of the Institution as the custodian of the National Collections.

The Smithsonian's first Secretary, Joseph Henry, implemented the charter through support of basic research and publication not only in Washington but through a global network of correspondence devoted to these same ends. At the same time, the Institution began to acquire substantial collections of biological and geological specimens and of archeological and ethnographic materials, derived both from its own research and from U.S. Government programs. The Institution continues to conduct research and education programs and to improve its collections. Today the Institution is acknowledged to be a major national resource for the study of natural and cultural history and to be without equal anywhere on earth.

## THE FY 1986 APPROPRIATION

For FY 1986, the Smithsonian requests an appropriation of \$2,500,000 equivalent in foreign currencies which have been determined by the Treasury Department to be in excess of the normal needs of the United States. This appropriation will be used to continue a program of grants to United States institutions for research in those countries where excess local currencies are available. Of the total requested, \$1,480,000 will be available for continuation of the grants program. The request also includes \$1,020,000 equivalent in Pakistani rupees for the fourth and final increment of a U.S. contribution for the restoration and preservation of Moenjodaro in Pakistan.

### Special Foreign Currency Program Appropriations and the U.S. Taxpayer

An appropriation for this program does not add to the tax burden of Americans because the money used for foreign currency grants comes from U.S. holdings of foreign currencies abroad in existing accounts that were established in connection with the "Food for Peace" (P.L. 480) program. These accounts were generated largely through sales of surplus U.S. agricultural commodities abroad in exchange for local currencies. In cases where these are greatly in excess of the projected normal U.S. needs, the Treasury Department designates them "excess foreign currencies." They then become available through the Special Foreign Currency Program appropriation process for U.S. uses like scientific research.

Erosion of these accounts by inflation is in many countries dramatically reducing their value to the United States. The Indian rupee has lost, for example, more than half of its value since 1970. As a consequence, when a worthy use of these excess currencies can be identified through programs like the Smithsonian Foreign Currency Program, the U.S. can effectively employ at least some of these currencies before inflation effectively eliminates their usefulness.

### PROGRAM OF GRANTS FOR RESEARCH

The purpose of the Smithsonian Foreign Currency Program is, like that of the Institution itself, "the increase and diffusion of knowledge." The Smithsonian Foreign Currency Program supports this purpose by making grants to United States universities, museums, and other institutions of higher learning, including the Smithsonian itself, primarily for research and advanced professional training in fields of traditional Smithsonian competence. An appropriation of \$1,480,000 equivalent in excess foreign currencies is sought for these grants.



The Smithsonian program is a major source of excess foreign currency support for research carried out by United States institutions in the excess currency countries. The Smithsonian program is distinguished from other Special Foreign Currency Programs in that the full responsibility for the design, execution and publication of research results rests with a scholar working within the program of a United States institution.

The Smithsonian program strengthens the research and training activities of collaborating institutions abroad, for most projects directly involve host country institutions and scholars. Enduring professional ties which result from joint efforts and scholarly exchange contribute to the strongest form of United States cultural relations with other nations. These ties contribute to the integration of the worldwide advancement of science which serves to narrow the gap between the industrial and the developing nations.

#### The Importance of Research in the Natural Sciences and Cultural History

The rapid growth of world population and technological development has resulted in significant effects on the natural environment and on society. Research sponsored by the Smithsonian in the natural sciences and in cultural history is aimed in part at improving understanding of the environment, of the management and protection of scarce resources, and the cultural setting within which social changes take place.

In FY 1984, grants supported the following projects of special interest:

The study of the great Buddhist caves at Ajanta in India has been enhanced by a complete photographic record of the remarkable 1500-year-old cave paintings.

Historians are participating in multidisciplinary studies on the depletion of tropical forests in India in an effort to provide a model for the study of long-term ecological change in tropical forests.

United States and Indian geologists are using recently developed fission tracking procedures on uranium bearing sandstone as an aid to the study of the history and movement of ancient ground water.

The unique reproductive biology of the mugger crocodile, currently endangered on the Indian subcontinent, is being studied to develop captive breeding and rearing programs.

Further, with emphasis on information exchange through small workshops, symposia and field conferences, the Smithsonian is encouraging international research in specialized areas. In FY 1984, for example, U.S. scholars received support for participation in exchanges on the subjects of arid land studies, numismatics, tiger management, Hindi studies, solar-terrestrial physics, and natural history collections.

### The Importance of Multi-Year Grants

Beginning in FY 1979 the Smithsonian Foreign Currency Program began a policy of multi-year funding of major programs, whenever sufficient funds were available. Such funding is important because rational planning requires the advance commitment of professors and graduate students as well as of facilities. Multi-year grants, with annual disbursements subject to satisfactory review of progress by the advisory councils, allow participating institutions to coordinate such projects into their long-range scholarly programs, by providing some assurance of funding for the duration of the project.

Further, the Smithsonian has been able to use multi-year grants to protect successful projects from sudden termination when excess currency accounts were abruptly exhausted. This happened in Poland and Tunisia in 1976 and in Egypt in 1981. With multi-year funding over a three-year period, 10 projects in Egypt were funded to reasonable conclusions and 3 continuing projects gained sufficient time to seek other funding sources. Multiyear funding of projects in India is planned in 1985 to bring some ongoing projects to completion.

### Benefits to United States Institutions

Since the inception of the program in FY 1966, Smithsonian grants have been made to 233 United States institutions in 41 states, Puerto Rico, and the District of Columbia to support more than 800 individual projects. Publications known to have resulted from program grants totalled more than 1,400 to date.

The benefits to U.S. institutions and the host country go beyond the accumulation of data, extending to the acquisition of collections of biological specimens and the archeological and ethnographic materials are acquired in the course of field research. These remain available for further study and interpretation by other generations of scholars long after the research teams supported by the Smithsonian have dispersed and their conclusions have been published. More than 100 such research collections have been placed in United States universities and museums. A similar number of collections has been added to the research resources of the excess currency countries.



The advantages of the program have extended to a far greater number of institutions than the 233 United States institutions which have received grants directly. For example, three of the grantee institutions are consortia of United States scholarly institutions. They are the American Institute of Indian Studies (AIIS) in Chicago, Illinois, with 49 institutional members; the American Research Center in Egypt (ARCE) in New York City, with 27 institutional and approximately 600 individual members; and the American Schools of Oriental Research (ASOR) in Cambridge, Massachusetts, with 135 member institutions.

Smithsonian grants have supported the research in India of 550 AIIS fellows over the 17-year period from FY 1968 through FY 1984. The fellows were drawn from 70 United States institutions in 23 states. Program grants have also supported more than 80 ARCE projects over the 18-year period from FY 1966 through FY 1984, and since FY 1977, 80 ARCE fellows have received Smithsonian support. Nine ASOR excavations in Israel and Tunisia provided research opportunities for more than 260 senior U.S. scholars and field training for more than 324 graduate students. The Indo-American Fellowship Program, initiated in FY 1977 under the auspices of the Indo-U.S. Subcommission on Education and Culture has sent more than 70 scholars from U.S. institutions to India.

#### Scientific Review Under the Smithsonian Program

The Smithsonian program considers proposals from any qualified American institution for research in fields of traditional Smithsonian competence. The program seeks the advice of experts in the specific area of sciences to be studied in reviewing the proposals and annually convenes advisory councils of senior scholars from across the nation. Following the recommendation in the House-Senate Conference Report 95-1672 dated September 29, 1978, the National Science Foundation reviews the credentials of the members of the advisory councils and certifies their competence. The councils discuss and evaluate the proposals, taking into consideration the experts' opinions, and provide specific advice to the Smithsonian regarding the selection of proposals recommended for support and the priorities among them.

Whether funded originally on a multi-year or on a one-year basis, projects lasting more than one year are subject to an annual review of scientific progress by the advisory councils before another year of funding is approved. In addition, Smithsonian staff scientists and program advisory council members visit projects in the field when firsthand scientific reports are considered necessary. Smithsonian policy requires that grantees publish scientific results and that scientific collections be readily accessible to the scholarly community.

Foreign currency awards to other institutions are executed as normal Federal contracts, with the American grantee institutions providing for full fiscal accountability. The Smithsonian audits each grantee's periodic financial reports and where grantees maintain records abroad, conducts site audits to ensure that appropriate accounting procedures are followed.

### The Importance to the Smithsonian of Awards for Research

Access to funds for independent research is an essential factor in enabling the Smithsonian to attract and retain leading researchers and thereby to maintain a standard of excellence as a research institution. In this context, the Institution's initial request in FY 1966 for an appropriation of excess foreign currencies made it clear that Smithsonian scholars would compete for these funds. The appropriation justification in that year stated that the Institution would "...award and administer foreign currency grants...for maximum benefit of all participating institutions, as well as the Smithsonian." This appropriation has provided Smithsonian scientists an opportunity to pursue new and innovative research.

Under the Special Foreign Currency Program guidelines, Smithsonian proposals are reviewed by the same councils of distinguished scholars as are proposals from other institutions. Continuing projects also are subject to annual reviews. (These processes are described above in the section entitled "Scientific Review under the Smithsonian Program.") The Special Foreign Currency Program awards to Smithsonian employees, as to other scholars, often involve participants from other organizations and universities as collaborators. No Smithsonian employee, nor any other grantee, receives personal compensation to duplicate or supplement his salary. Program awards cover only field research costs in the excess currency country and travel to that country.

The awards to Smithsonian employees are executed as normal Federal allotments to the individual bureaus of the Institution for the support of approved employee research projects. Such funds are expended in accordance with Federal procurement and personnel regulations.

### FORWARD-FUNDED RESERVE FOR THE AMERICAN INSTITUTE OF INDIAN STUDIES

Since 1967, the Smithsonian has provided annual funding to the American Institute of Indian Studies for fellowships, research, symposia and publications and for administrative costs. The Smithsonian has helped sustain this Institute and other American research centers abroad for more than a decade because of their significant contributions to scholarship and science without regard for national boundaries and their special service to American scholars conducting research.

In FY 1980, FY 1981, FY 1984, and FY 1985, anticipating the future depletion of the excess Indian rupee, the Smithsonian sought and received appropriations totaling \$7,170,000 for a forward-funded reserve for continuation of the activities of the American Institute of Indian Studies after the demise of the excess currency program in that country.

The Treasury Department has announced that FY 1985 is the last year of excess status for the Indian rupee. Thus, in FY 1986, the AIIS will begin to draw from the forward fund for its Indian programs. The Smithsonian will continue to monitor the progress of AIIS programs through annual proposals screened by a peer review panel. Annual increments of funds will be released upon successful scholarly and administrative review.

### INTERNATIONAL EFFORT TO SALVAGE MOENJODARO

In 1921, two important discoveries were made in the Indus Valley of India, now Pakistan, when archeologists discovered the remains of the cities of Harappa, near Lahore, and Moenjodaro, about 250 miles north of Karachi. These two cities apparently are the products of the Harappan civilization which flourished over 4,500 years ago, from about 3000 B.C. to 1500 B.C. Moenjodaro, a city of a square mile, is the larger and more impressive of the two sites. From the standpoint of planning, sanitation and social organization, this city anticipates developments which only blossomed several thousand years later.

The excavated ruins at Moenjodaro have been threatened since their discovery by two main causes of destruction: floods of the Indus River and highly saline ground waters have caused the serious deterioration of the excavated remains.

Since the 1960's, the Government of Pakistan has appealed to the international community for assistance in salvaging Moenjodaro by diverting the river, lowering the water table, providing remedial action to stabilize threatened buildings and preventing disintegration of those that have not yet been seriously damaged, and installing appropriate landscaping. UNESCO responded to Pakistan's appeal and, in 1974, agreed to lead an international fund raising campaign. In the interim, the Government of Pakistan, with the assistance of UNESCO, has conducted a series of technical studies relating to river control, dewatering and other methods conducive to the eventual preservation of the site.

The project, long in the planning stage, is underway, with a ground water control scheme now in place. Requisitions are being prepared for water pumps, for the consolidation and treatment of the remaining structures and for landscaping. Salt-resistant plants will be planted for erosion control and to provide suitable protection from wind-driven sands.

On October 10, 1979, an agreement between UNESCO and the Government of Pakistan for the preservation and development of the monumental site of Moenjodaro was signed. Following this, an Executive Committee of the Campaign was set up to advise the Director-General of UNESCO on all aspects of the project. The Committee has held several meetings during which various aspects of the plans were reviewed.

To date, UNESCO has raised approximately \$9.3 million, mainly from governmental contributions of member states and the Government of Pakistan has made an initial commitment of \$3,000,000 for the project. The funds raised thus far have been deposited in an international trust fund for Moenjodaro. Considering that the total budget for the project is now estimated at more than \$19,000,000, the Committee is seeking new or additional contributions.



In FY 1982, the Institution transferred to UNESCO the appropriation of \$960,000 equivalent in nonconvertible Pakistani currency as an initial contribution from the United States toward this important project. In FY 1984 and FY 1985, \$1,040,000 and \$980,000 were conveyed respectively. The Smithsonian is seeking a fourth and final increment of funds for this project in FY 1986, a sum of \$1,020,000 equivalent in Pakistani rupees, to complete the United States contribution.

Although the United States has withdrawn from UNESCO beginning January 1985, the funds for this important activity can continue to be made available to the campaign through another means, such as a transfer through a U.S. educational organization in Pakistan.

SMITHSONIAN INSTITUTION  
MUSEUM PROGRAMS AND RELATED RESEARCH  
(SPECIAL FOREIGN CURRENCY PROGRAM)

9

SUMMARY OF OBLIGATIONS, ACTUAL AND ESTIMATED  
FY 1984, FY 1985, and FY 1986

Obligations of Funds by Program Area  
(dollar equivalents)

	FY 1984 <u>Actual</u>	FY 1985 <u>Estimate</u>	FY 1986 <u>Estimate</u>
Archeology and Related Disciplines	\$5,868,000 <u>1/2/</u>	\$7,470,000 <u>1/2/</u>	\$1,630,000 <u>1/2/</u>
Systematic and Environmental Biology	658,000	851,000	535,000
Astrophysics and Earth Sciences	116,000	195,000	195,000
Museum Programs	405,000	360,000	145,000
Grant Administration <u>3/</u>	92,000	105,000	35,000
Science Information Program (Translations)	<u>180,000</u>	<u>150,000</u>	<u>75,000</u>
Total	\$7,319,000	\$9,131,000	\$2,615,000

Obligations of Funds by Country  
(dollar equivalents)

	FY 1984 <u>Actual</u>	FY 1985 <u>Estimate</u>	FY 1986 <u>Estimate</u>
Burma	\$ 4,000 <u>3/</u>	\$ 16,000 <u>3/</u>	\$ 21,000 <u>3/</u>
Guinea	-0-	5,000	5,000
India	5,914,000 <u>1/3/4/</u>	7,730,000 <u>1/3/4/</u>	-0-
Pakistan	1,401,000 <u>2/3/</u>	1,395,000 <u>2/3/4/</u>	2,460,000 <u>2/3/4/</u>
Poland	<u>-0-</u>	<u>5,000</u>	<u>150,000</u> <u>3/</u>
Total	\$7,319,000	\$9,131,000	\$2,615,000

- 1/ Includes obligation for AIIS forward-funded reserve: FY 1984, \$2,000,000; FY 1985, \$3,920,000.
- 2/ Includes obligation for U.S. contribution for Moenjodaro: FY 1984, \$1,040,000; FY 1985, \$980,000; FY 1986, \$1,020,000.
- 3/ Includes transfers to the State Department for "Foreign Affairs Administrative Support."
- 4/ Includes estimates for Science Information Program for translations.



MUSEUM PROGRAMS AND RELATED RESEARCH  
(SPECIAL FOREIGN CURRENCY PROGRAM)

FISCAL YEAR 1984 - ACTUAL OBLIGATIONS

Actual Obligations by Program Area  
(dollar equivalents)

	<u>Research Projects 1/</u>	<u>Research Development 1/</u>	<u>Total</u>
Archeology and Related Disciplines	\$5,850,000	\$ 18,000	\$5,868,000
Systematic and Environ- mental Biology	584,000	74,000	658,000
Astrophysics and Earth Sciences	105,000	11,000	116,000
Museum Programs	<u>405,000</u>	<u>-0-</u>	<u>405,000</u>
TOTAL FOR RESEARCH	\$6,944,000	\$103,000	\$7,047,000
SFCP Grant Administration 2/			92,000
Science Information Program-Translations			<u>180,000</u>
TOTAL			\$7,319,000

Actual Obligations by Country  
(dollar equivalents)

	<u>Grants Administration and Agency Transfers</u>	<u>Research Projects</u>	<u>Research Development</u>	<u>Total</u>
Burma	\$ -0-	\$ 2,000	\$ 2,000	\$ 4,000
Guinea	-0-	-0-	-0-	-0-
India	253,000 2/	5,574,000 3/5/	87,000	5,914,000 3/5/
Pakistan	<u>19,000 2/</u>	<u>1,368,000 4/</u>	<u>14,000</u>	<u>1,401,000 4/</u>
TOTAL	\$272,000	\$6,944,000	103,000	\$7,319,000

1/These projects are described in the Grants List which follows.

2/Includes transfers to the State Department for "Foreign Affairs  
Administrative Support."

3/Includes obligation for AIIS forward-funded reserve - \$2,000,000.

4/Includes obligation for U.S. contribution for Moenjodaro - \$1,040,000.

5/Includes estimates for Science Information Program for translations.

MUSEUM PROGRAMS AND RELATED RESEARCH  
(SPECIAL FOREIGN CURRENCY PROGRAM)

FISCAL YEAR 1985 - ESTIMATED OBLIGATIONS

Estimated Obligations by Program Area  
(dollar equivalents)

	<u>Research Projects</u>	<u>Research Development</u>	<u>Total</u>
Archeology and Related Disciplines	\$7,447,000	\$ 23,000	\$7,470,000
Systematic and Environmental Biology	767,000	84,000	851,000
Astrophysics and Earth Sciences	178,000	17,000	195,000
Museum Programs	<u>353,000</u>	<u>7,000</u>	<u>360,000</u>
TOTAL FOR RESEARCH	\$8,745,000	\$131,000	\$8,876,000
SFCP Grant Administration <u>1/</u>			105,000
Science Information Program -- Translations			<u>150,000</u>
TOTAL			\$9,131,000

Estimated Obligations by Country  
(dollar equivalents)

	<u>Grants Administration &amp; Science Information Program</u>	<u>Research Projects</u>	<u>Research Development</u>	<u>Total</u>
Burma	-0-	\$ 13,000	\$ 3,000	\$ 16,000
Guinea	-0-	4,000	1,000	5,000
India	300,000 <u>2/</u>	7,331,000 <u>3/</u>	99,000	7,730,000 <u>3/</u>
Pakistan	85,000 <u>2/</u>	1,267,000 <u>4/</u>	23,000	1,375,000 <u>4/</u>
Poland	<u>-0-</u>	<u>-0-</u>	<u>5,000</u>	<u>5,000</u>
TOTAL	\$385,000	\$8,615,000	\$131,000	\$9,131,000

1/Includes transfers to the State Department for "Foreign Affairs Administrative Support."

2/Includes estimates for the Science Information Program for translations.

3/Includes \$3,920,000 estimated obligation for AIIS forward-funded reserve.

4/Includes \$980,000 estimated obligation for U.S. contribution to Moenjodaro.

MUSEUM PROGRAMS AND RELATED RESEARCH  
(SPECIAL FOREIGN CURRENCY PROGRAM)

FISCAL YEAR 1986 - ESTIMATED OBLIGATIONS

Estimated Obligations by Program Area  
(dollar equivalents)

	<u>Research Projects</u>	<u>Research Development</u>	<u>Total</u>
Archeology and Related Disciplines	\$1,610,000	\$ 20,000	\$1,630,000
Systematic and Environmental Biology	506,000	29,000	535,000
Astrophysics and Earth Sciences	157,000	38,000	195,000
Museum Programs	<u>134,000</u>	<u>11,000</u>	<u>145,000</u>
TOTAL FOR RESEARCH	\$2,407,000	\$ 98,000	\$2,505,000
SFCP Grant Administration <u>1/</u>			35,000
Science Information Program -- Translations			<u>75,000</u>
TOTAL			\$2,615,000

Estimated Obligations by Country  
(dollar equivalents)

	<u>Grants Administration &amp; Science Information Program</u>	<u>Research Projects</u>	<u>Research Development</u>	<u>Total</u>
Burma	\$ 1,000 <u>1/</u>	\$ 15,000	\$ 5,000	\$ 21,000
Guinea	-0-	4,000	1,000	5,000
Pakistan	105,000 <u>1/</u>	2,278,000 <u>2/3/</u>	56,000	2,439,000 <u>2/3/</u>
Poland	<u>4,000</u> <u>1/</u>	<u>110,000</u>	<u>36,000</u>	<u>150,000</u>
TOTAL	\$110,000	\$2,407,000	\$ 98,000	\$2,615,000

1/Includes transfers to the State Department for "Foreign Affairs Administrative Support."

2/Includes estimates for the Science Information Program for translations.

3/Includes \$1,020,000 estimated obligation for U.S. contribution to Moenjodaro.

MUSEUM PROGRAMS AND RELATED RESEARCH  
(SPECIAL FOREIGN CURRENCY PROGRAM)

STATUS OF FUNDS  
(dollar equivalents)

	FY 1984 <u>Actual</u>	FY 1985 <u>Estimated</u>	FY 1986 <u>Estimated</u>
Unobligated Balance Start of Year	39,000	161,000	100,000
Appropriation	7,040,000	8,820,000	2,500,000
Recovery of Prior Years' Obligations	401,000	250,000	75,000
Unobligated Balance, End of Year	<u>161,000</u>	<u>100,000</u>	<u>60,000</u>
TOTAL OBLIGATION	7,319,000	9,131,000	2,615,000

SMITHSONIAN INSTITUTION  
MUSEUM PROGRAMS AND RELATED RESEARCH  
(SPECIAL FOREIGN CURRENCY PROGRAM)  
Fiscal Year 1984

List of Grants

ARCHEOLOGY AND RELATED DISCIPLINES

The study of archeology, anthropology, and related fields such as ethnology, are studies of changes in the human condition brought about by the environment and by cultural factors. Societies such as ours that are undergoing rapid change are subject to increasing pressures to accommodate new factors. These societies must look to studies of the history of man as well as to studies of today's condition to find answers to such questions as:

- a) How have societies responded to similar pressures in the past?
- b) What are those elements in our condition that are biological imperatives or are so culturally interdependent that we dare not change them? For example, is the family unit essential to the survival of our civilization?
- c) What are the current options available to today's societies?

The urgency to understand the forces demanding change in human societies has caused scholars to study man and communities, past and present, for a better grasp of the process of social change.

Projects of United States institutions which contribute to understanding these processes and which received support in FY 1984, are listed below.

<u>Institution</u>	<u>Principal Investigator</u>	<u>Obligation Number</u>	<u>\$ Eqv.</u>
<u>BURMA</u>			
1. Duke U. Durham, NC	J. Richards	41009401	\$ 256
2. U. of Hawaii at Manoa Honolulu, HI	W. Solheim	TX41008401	\$ 548

Development of a program on Burmese prehistory.

INDIA

3. American Institute of Indian Studies Chicago, IL	E. Dimock	4061300, 4084250 & Amend. 1	\$1,642,373
---	-----------	-----------------------------------	-------------

The American Institute of Indian Studies (AIIS) was founded in 1961 and today has a membership of 40 United States institutions. The AIIS is a unique national resource because it is the principal source of money supporting on an annual basis in the United States, the advancement of knowledge and understanding of India as well as the training in India of area specialists.



Moreover, the AIIS has served the U.S. national interest by sustaining active scholarly collaboration between the U.S. and India during periods of political stress when contacts have been interrupted. Disciplines sponsored by the AIIS are increasing from the original concentration on social sciences and the humanities to include the natural sciences as well. Smithsonian support of the AIIS has totalled more than \$10,312,000 equivalent in Indian rupees over a seventeen-year period.

The AIIS provides administrative support for its fellows and for a major language program from a headquarters in New Delhi and small offices in Bombay, Calcutta, Madras, and Poona.

The principal activity of the AIIS has been the appointment of fellows. The SFCP currently provides most of the funds for this fellowship program. AIIS fellows receiving support during FY 1984 are listed below.

#### SENIOR RESEARCH FELLOWS

Ali Akbar Khan College	Geoffrey Lipner
Amherst College	Robert Thurman
Arizona State University	Anne Feldhaus
California State University	Asoke Basu
Carleton College	Philip Engblom
City College of New York University	Baidya Varma
Colegio de Mexico	David Lorenzen
Columbia University	Pramod Kale
Florida International University	David Lee
Harvard Medical School	Daniel P. Brown
Harvard University	Pramod Chandra Diana Eck Akos Oster
Kansas State University	Janet Benson William Richter Charles Stroh
Lumen Dance Theater	Antonia Minnecola
Miami School of Music	Vicki Richards
Michigan State University	Aruna N. Michie Barry Michie

Middlebury College	David Napier
New England Conservatory	Eric Charry
Northwestern University	Manjunath Pendakur
Sonoma State University	Laxmi Tewari
Temple University	Charles Weitz
Towson State University	Edwin Hirschman
Unaffiliated	Manibar Rahman Michael Siegell
University of California	Satendra Khanna Mattison Mines
University of Chicago	Som R. Majumdar C.M. Naim George R. Strohl, III
University of Illinois	Pallassana Balgopal Blair B. Kling
University of Iowa	Wayne Begley Jeffrey L. Cox Sheldon Pollock
University of Minnesota	Robert Dixon James Perry
University of Pennsylvania	Thomas Fogarty Surendra Gambhir Vijay Gambhir Frederick Smith Sanford Steever
University of Virginia	Murray Milner
University of Washington	John S. Hawley
University of Wisconsin	Carol Hanson Manindra Verma
Western Michigan University	D.P.S. Dwarikesh

## JUNIOR RESEARCH FELLOWS

Duke University	David Rasmussen
Harvard University	Jane Casey Barbara Holdrege Cynthia Stangroom
Kansas State University	Neena Kapoor
Kent State University	Gregory Booth
New York University	Monica Lawyer Bergman
Stanford University	Pradeep Dhillon
Syracuse University	Swapna Mukhopadhyay Aditya Tyagi
University of Arizona	Pamela Stanbury
University of California	Edwin Bernbaum Padma Kaimal Lydia Morales Victoria Mukerji Charles Pain
University of Chicago	Neal Delmonico Patricia Gossman Gail Hinich
University of Hawaii	Surojit Gupta Januna Ramadrishna
University of Illinois	Debashish Bhattacharjee
University of Kansas	Samuel Mathai
University of Minnesota	Glenn Ames
University of Pennsylvania	Jonathan David George Gillespie Thomas Zwicker
University of Rochester	Lois Metcalf
University of Washington	Allen Kornmesser Robert Lucky
University of Wisconsin	John Loud Sashi Pandey Carol Saavas

<u>Institution</u>	<u>Principal Investigator</u>	<u>Obligation Number</u>	<u>\$ Eqv.</u>
4. American Institute of Indian Studies Chicago, IL	N. Jairazbhoy	41008100	\$145,518

The establishment of the Archives and Research Center for Ethnomusicology will provide a center for the documentation of traditional Indian folk music as studied by international scholars.

5. American Institute of Indian Studies Chicago, IL	.G. Possehl	41008200	\$255,570
--	-------------	----------	-----------

The Center for Art and Archeology at Benares, India, is a vital research facility serving scholars of ancient and modern India from all over the world. The Center was established to apply rigorous scholarly standards to the massive job of photographing and indexing the art collections and temples and monuments of India which abound in every region of the subcontinent. The archive of more than 30,000 photographs continues to grow as important projects such as the photographing of collections in the Indian Museum in Calcutta are undertaken.

6. American Institute of Indian Studies Chicago, IL	E. Dimock	007560 Amend. 2	\$2,000,000
--	-----------	--------------------	-------------

A forward-funded reserve account has been established to support the activities of the American Institute of Indian Studies in India when the depletion of the U.S. India rupee account causes its removal from excess currency status.

7. American Institute of Indian Studies Chicago, IL	M. Verma	TX4000073,-074, -075, & -076	\$9,437
--	----------	---------------------------------	---------

Participation in the Third World Hindi Convention at New Delhi, October 1983.

8. Asian Cultural Council (agent for the American Panel of the Indo-U.S. Subcommission on Education and Culture) New York	T. Tanen	41009500 & 40619200	\$264,885
--	----------	------------------------	-----------

<u>Institution</u>	<u>Principal Investigator</u>	<u>Obligation Number</u>	<u>\$ Eqv.</u>
--------------------	-------------------------------	--------------------------	----------------

The Indo-American Fellowship Program, established in late 1975, was created to widen the circle of scholarly/professional contacts and increase the extent of collaboration between the U.S. and India. Fellowships are granted for research in India, primarily at the postdoctoral or equivalent level with substantial collaboration with Indian colleagues. The fellows who received support in FY 1984 are:

Atelier du Livre	Alexandra Soteriou		
Case Western Reserve University	John Taber		
Harvard University	Robert Gardner		
Randolph-Macon Women's College	John d'Entremont		
Stonehill College	Gregg de Young		
Talladega College	Leon P. Spencer		
Unaffiliated	Vickie Elson		
Unaffiliated	Henry Leo Schoebel		
University of California	Daniel Crowley		
University of Iowa	Jeffrey Cox		
West Virginia University	Edward Pytlik		

9. U. of Minnesota Minneapolis, MN	F. & C. Asher	41009300	\$11,845
---------------------------------------	---------------	----------	----------

Preparation and study of architectural plans of the monuments at Nalanda, including a Buddhist monastery, will complete a picture of the evolution of the site from Lodi to Mughal architecture.

10. U. of Washington Seattle, WA	J. Bacharach	TX400111	\$2,707
-------------------------------------	--------------	----------	---------

Participation in the International Numismatic symposium, January 1984, inaugurating the new center of the Indian Institute of Research in Numismatic Studies at Nasik, India.

11. U. of Wisconsin Madison, WI	J. Elder	9037700 Amend. 7	\$5,500
------------------------------------	----------	---------------------	---------

Preparation of documentary films on selected aspects of contemporary South Asian civilizations.



<u>Institution</u>	<u>Principal Investigator</u>	<u>Obligation Number</u>	<u>\$ Eqv.</u>
12. U. of Chicago Chicago, IL	J. Erdman	TX400963	\$2,642

Participation in the Ethnomusicology Seminar and Workshop at Pune.

13. U. of Pennsylvania Philadelphia, PA	F. Frankel	30616400 Amend. 1	\$1,200
--	------------	----------------------	---------

U.S. and Indian scholars are collaborating in an effort to document regional patterns of political and economic change in modern India.

14. U. of New Mexico Albuquerque, NM	J. Fritz	40179600 TX400181	\$60,771
---	----------	----------------------	----------

Study of Vijayanagara, the Hindu imperial capital, is providing valuable understanding of the organizational patterns and principles embodied in this greatest of medieval Hindu urban centers.

15. Case Western Reserve U., Cleveland, OH	M. Goldstein	TX400725	\$1,000
---	--------------	----------	---------

The final years of Tibetan history - 1933-1950 - will be documented with interviews of the aging refugees now residing in India.

16. Western Michigan U. Kalamazoo, MI	A. Helweg	TX400602	\$206
--	-----------	----------	-------

Widespread migration of professional and highly skilled Gujaratis is being studied to determine the little known effect of migration on the sending society.

17. Smithsonian Institution Washington, D.C.	R. Hebert	TX400215	\$2,731
--	-----------	----------	---------

Participation in the International Numismatic symposium, January 1984, inaugurating the new center of the Indian Institute of Research in Numismatic Studies at Nasik, India.

18. Columbia U. New York, NY	B. Joshi	TX400031 & -032	\$5,000
---------------------------------	----------	--------------------	---------

Indian participation in the conference on "Minority Development Strategies in Comparative Perspective" at Columbia University, November 1983.

<u>Institution</u>	<u>Principal Investigator</u>	<u>Obligation Number</u>	<u>\$ Eqv.</u>
19. U. of Houston Houston, TX	P. Kolenda	40180900 & Amend. 1	\$48,870

Restudy of the village Khalapur in northern India is providing valuable anthropological data on the changes which have occurred over a thirty-year period.

20. U. of Arizona	M. Mahar	30725800 Amend 1 & 2	\$6,716 .
-------------------	----------	-------------------------	-----------

The restudy of an Indian village after a 30-year interval is providing a controlled picture of change in rural India.

21. U. of Wisconsin Madison, WI	A. Narain	TX400163	\$4,547
------------------------------------	-----------	----------	---------

Participation in the International Numismatic Symposium, January 1984, inaugurating the new center of the Indian Institute of Research in Numismatic Studies at Nasik, India.

22. Boston U. Boston, MA	H. Papanek	TX400276	\$6,823
-----------------------------	------------	----------	---------

Development of a program of collaborative investigation on women's education, employment, and family life.

23. U. of Pennsylvania Philadelphia, PA	G. Possehl	4018100	\$89,633
--	------------	---------	----------

The unusual change back to pastoral nomadism from urbanized civilization is being examined in an archeological program in Gujarat.

24. Duke U. Durham, NC	J. Richards	41008400	\$15,540
---------------------------	-------------	----------	----------

Historical analysis of land use vegetation changes in India from 1800 to 1980 will provide new information for future land use management.

25. U. of Washington Seattle, WA	H. Sakata	TX400867	\$2,540
-------------------------------------	-----------	----------	---------

Participation in the Festival of Tribal Music and Dance at Lucknow, September 1984.

26. U. of Washington Seattle, WA	H. Schiffman	40972100	\$15,159
-------------------------------------	--------------	----------	----------

Preparation of the first comprehensive English dictionary of the Tamil verb.

<u>Institution</u>	<u>Principal Investigator</u>	<u>Obligation Number</u>	<u>\$ Eqv.</u>
27. Northeastern U. Boston, MA	P. Serenyi	40917700	\$27,324

A study of the contemporary architecture of India will highlight Indian architects of the post-LeCorbusier period.

28. U. of California Los Angeles, CA	J. Sisson	TX400772	\$1,914
---	-----------	----------	---------

Development of a program to commemorate the golden anniversary of the Indian National Congress.

29. U. of Michigan Ann Arbor, MI	W. Spink	40136100	\$33,560
-------------------------------------	----------	----------	----------

Current studies of the Buddhist cave paintings at Ajanta are seeking to prove that the extensive decorations developed in a twenty-year burst of activity rather than over the two century period previously thought.

30. U. of Arizona Tucson, AZ	W. Stini	TX400187	\$2,928
---------------------------------	----------	----------	---------

Participation in the Silver Jubilee Conference on Man and the Environment at Calcutta, December 1983.

31. Oakland University Rochester, MI	R. Tucker	TX400211	\$6,040
---	-----------	----------	---------

Massive deforestation in India began under colonial rule. A survey of the modern history of ecological change during the years of British administration will provide information for development of a management model for the future.

32. Southern Methodist U. Dallas, TX	F. Wendorf	TX400230,-232, & Amends. 1	\$6,582
--	------------	-------------------------------	---------

Publication of archeological reports on the prehistory of Egypt.

33. American U. Washington, D.C.	C. White	41009200	\$51,000
-------------------------------------	----------	----------	----------

The rich Vaishnava literary heritage of India is being recorded and conserved with a major effort to microfilm documents in private and public collections throughout India.

<u>Institution</u>	<u>Principal Investigator</u>	<u>Obligation Number</u>	<u>\$ Eqv.</u>
<u>PAKISTAN</u>			
34. U. of California Berkeley, CA	G. Dales	TX400332, -333, -334	\$15,694

Research into the paleo-environmental and archeological history of a 4000 B.C. coastal site in Pakistan illustrating that Balakot was indeed a seaport (now several miles inland) and that trade was carried on with Mesopotamia and the Persian Gulf. The boring of stratigraphic cores is determining the physical environmental situation in relation to the ancient coastline and may provide historical information directly bearing on present-day development schemes for harbors and coastal facilities.

35. U. of Colorado Boulder, CO	L. Flam	TX400891, & -992	\$9,874
-----------------------------------	---------	---------------------	---------

Development of a program of prehistoric archeological excavation at Ghazi Shah.

36. Wesleyan U. Middletown, CT	L. Keiser	40250400	\$71,518
-----------------------------------	-----------	----------	----------

A program of ethnographic research in Pakistan is gathering basic data on patterns of social structure, culture, linguistics, and population of little known tribal and peasant groups of northern Pakistan.

# SYSTEMATIC AND ENVIRONMENTAL BIOLOGY

For much of our history as a nation, we have regarded technology as the key to the betterment of the human condition. It is a concept that once stood virtually unquestioned and which has profoundly influenced changing cultural patterns around the world. Today, however, it is becoming increasingly obvious that technology exacts its price, one that is multiplied by new levels of population. Biological scientists who once concerned themselves with laying the brick-work of the edifice of human knowledge now find themselves with a new responsibility. We now know that it is imperative to establish norms for our environmental systems, to monitor changes, and to predict the consequences of social policies that may have an injurious environmental impact. American scientists are again the leaders in international research efforts in these new fields. Through the long-term collaborative relationships between American and foreign institutions and scholars, research conducted under the Smithsonian Foreign Currency Program serves as a foundation for the intense efforts that will be required to solve the problems of biological science that transcend national boundaries.

<u>Institution</u>	<u>Principal Investigator</u>	<u>Obligation Number</u>	<u>\$ Eqv.</u>
--------------------	-------------------------------	--------------------------	----------------

## BURMA

37. New York U. New York, NY	H. Dowling	TX400688	\$923
---------------------------------	------------	----------	-------

Investigation of the snakes of Burma will provide a comprehensive listing of the poisonous and non-poisonous varieties, now non-existent in a country which has the highest mortality rate from snake bites.

38. Smithsonian Institution Washington, D.C.	M. Moynihan	TX400406	\$448
--	-------------	----------	-------

Development of a program of behavioral studies of marine invertebrates.

39. California Academy of Sciences Los Angeles, CA	T. Roberts	TX4100790	\$448
--	------------	-----------	-------

Development of a program of systematic studies of the freshwater fishes of Burma.

40. Smithsonian Institution Washington, D.C.	M. Robinson & R. Rubinoff	TX400095 & -104	\$1,530
--	------------------------------	--------------------	---------

Development of a program of collaborative research in environmental and evolutionary biology.



<u>Institution</u>	<u>Principal Investigator</u>	<u>Obligation Number</u>	<u>\$ Eqv.</u>
<u>INDIA</u>			
41. International Crane Fdn. Baraboo, WI	G. Archibald	TX400710	\$4,449

Development of a program of ecological studies of the reproductive behavior of cranes will contribute to the development of a conservation plan for these threatened birds.

42. Smithsonian Institution Washington, D.C.	D. Challinor	TX400095 to -102, -104, -106, -109, -110, -125, -132, -156, -167, -172 -814	\$73,051
---	--------------	--	----------

U.S. participation in the Centenary Symposium of the Bombay Natural History Society, December 1963.

43. Brown U. Providence, RI	G. Conroy	TX300171 Amend. 1	\$227
--------------------------------	-----------	----------------------	-------

Paleontological studies in the Siwaliks of India will fill in the enormous geographical gap between primate discoveries in Pakistan and China.

44. Iowa State U. Ames, IA	C. Davis	4013600	\$130,517
-------------------------------	----------	---------	-----------

Studies on the vegetation in the Bharatpur wetland will be used to develop indices and guidelines for predicting the impact that the changes in water regime will have on vegetation development in semitropical, monsoonal freshwater wetlands.

45. Iowa State U. Ames, IA	C. Davis	400376, -377, -378, -379	\$7,044
-------------------------------	----------	--------------------------	---------

U.S. participation in the International Workshop of the World Council for the Biosphere.

46. New York U. New York, NY	H. Dowling	TX400688	\$3,664
---------------------------------	------------	----------	---------

Examination of collections of Burmese snakes in Indian collections is providing basic information for the development of a comprehensive study of the snakes of Burma.

47. U. of Washington Seattle, WA	D. Farner	TX400062, -63, -64, -65, -72, -80, -83	\$10,686
-------------------------------------	-----------	--	----------

U.S. participation in the International Symposium on Environment and Hormones, December 1983, at Srinigar.

<u>Institution</u>	<u>Principal Investigator</u>	<u>Obligation Number</u>	<u>\$ Eqv.</u>
48. Carnegie Museum of Natural History Pittsburgh, PA	C. Gans	30543300 Amend. 1	\$46,443

A baseline collection of reptiles and amphibians is being made in south India before environmental destruction of the forests destroys the large endemic population of these animals.

49. U. of Michigan Ann Arbor, MI	P. Grant	40998100	\$12,700
-------------------------------------	----------	----------	----------

A field study of Old World Leaf Warblers, using variation in plumage patterns will contribute to a greater understanding of speciation mechanisms in continental birds.

50. U. of Minnesota St. Paul, MN	P. Jordan	TX400060 & -111	\$7,906
-------------------------------------	-----------	--------------------	---------

A program of scientific tiger monitoring in Indian parks will introduce new techniques developed during similar programs in Nepal.

51. Smithsonian Institution Washington, D.C.	K. Krishna Raju	TX400852	\$2,500
--	-----------------	----------	---------

Consultation with museum staff on the development of a collaborative program of biological research in the Eastern Ghats.

52. Smithsonian Institution Washington, D.C.	K. Kumar	TX400890	\$400
--	----------	----------	-------

Travel to the U.S. to undertake a fellowship in paleontology at the National Museum of Natural History in Washington, D.C.

53. U. of North Dakota Grand Forks, ND	J. Lang	TX400350 & 40992500	\$29,136
---	---------	------------------------	----------

Investigation of the reproductive behavior of the mugger crocodile will contribute to the development of a management plan for rearing and breeding this endangered animal.

54. Minnesota Zoological Garden Apple Valley, MN	J. Lewis	TX400709	\$2,865
--	----------	----------	---------

Participation in the International Union for Conservation of Nature and Natural Resources (IUCN) Cat Specialist Group meeting at Kanha National Park, April 1984.

<u>Institution</u>	<u>Principal Investigator</u>	<u>Obligation Number</u>	<u>\$ Eqv.</u>
55. Washington U. St. Louis, MO	W. Lewis	TX400188	\$5,257

Participation in meetings of the Indian Aerobiological Society at Hyderabad, December 1983.

56. Smithsonian Institution Washington, D.C.	M. Moynihan	TX400406	\$3,500
--	-------------	----------	---------

Behavioral studies of cephalopods in South India will provide important comparative material for studies of New World species.

57. U. of Michigan Ann Arbor, MI	R. Nussbaum	TX4000033 & -34	\$14,475
-------------------------------------	-------------	--------------------	----------

Development of a collaborative program of systematic studies of Indian caecilians, limbless, burrowing amphibians and probably the least studied order of terrestrial vertebrates.

58. Pennsylvania State U. University Park, PA	D. Pearson	4046300	\$10,706
--	------------	---------	----------

Observational and manipulative tests on Indian tiger beetles are providing for comparative studies on New World species.

59. Boston U. Boston, MA	R. Primack	TX400103	\$5,776
-----------------------------	------------	----------	---------

Development of a project to analyze growth rates of tropical trees in the Western Ghats of India utilizing data which has been measured every five years since 1939.

60. Smithsonian Institution Washington, D.C.	T. Reed	TX4000000 & Amend. 1	\$5,367
--	---------	-------------------------	---------

Consultation with zoo and wildlife officials on the development of new facilities in India.

61. Smithsonian Institution Washington, D.C.	S. Ripley & B. Beehler	TX300951 Amend. 1	\$546
--	---------------------------	----------------------	-------

An ornithological field survey in Andhra Pradesh, India, examined an area previously studied in the 1930's to assess the faunal changes under the pressure of uncontrolled development.

<u>Institution</u>	<u>Principal Investigator</u>	<u>Obligation Number</u>	<u>\$ Eqv.</u>
62. California Academy of Sciences Los Angeles, CA	T. Roberts	4100790	\$11,668

Modern collecting of freshwater fishes from South Asia are incomplete. Specimens of these fishes collected in the Western Ghats of India will provide well-documented and preserved specimens from an important, but little studied area.

63. Smithsonian Institution Washington, D.C.	R. Rudran	TX400811 & -812	\$5,000
---	-----------	--------------------	---------

Travel of Indian participants in a summer conservation field training program at the National Zoological Park Conservation Center at Front Royal, Virginia.

64. Duke U. Durham, NC	E. Simons	TX400586, -587, & -588	\$10,480
---------------------------	-----------	---------------------------	----------

The study of natural slender loris populations in South India will provide important data for the management for the only captive breeding population in the west, located at Duke Primate Center.

65. Utah State U. Logan, UT	J. Skujins	TX400227	\$3,000
--------------------------------	------------	----------	---------

U.S. participation in the Man in the Biosphere project, "Impact of Human Activities on the Organic Matter Productivity of Grazing Lands," at New Delhi, December 1983.

66. U. of Minnesota St. Paul, MN	J. Smith	TX400387	\$2,300
-------------------------------------	----------	----------	---------

Participation in the IUCN Cat Specialist Group meeting at Kanha National Park, April 1984.

67. Smithsonian Institution Washington, D.C.	C. Suresh	TX400835	\$3,000
---	-----------	----------	---------

Travel to U.S. to a fellowship in botany at the National Museum of Natural History in Washington, D.C.

68. Ohio State U. Columbus, OH	C. Triplehorn	TX400030	\$2,500
-----------------------------------	---------------	----------	---------

Travel of Indian participant in the Entomological Society of America meetings at Detroit, November 1983.

<u>Institution</u>	<u>Principal Investigator</u>	<u>Obligation Number</u>	<u>\$ Eqv.</u>
<u>PAKISTAN</u>			
69. Howard U. Washington, D.C.	S.T. Hussain	41007800	\$100,000
Field studies of recently discovered vertebrate fauna from the Miocene lower Siwaliks of Pakistan, includes six families of rodents and two of insectivores some of which are new to South Asian fossil deposits.			
70. Harvard U. Cambridge, MA	D. Pilbeam	30942300, Amend. 1 & 41008000	\$119,952

In a search for fossils of small and large animals in Pakistan, particularly for primates dating from the time of man's earliest development, a collaborative effort between Harvard University and the Geological Survey of Pakistan is striving toward a better understanding of the evolution of man.

71. American Museum of Natural History New York, NY	J. Rozen, Jr.	TX400515, -516, -517, & -518	\$19,296
---	---------------	---------------------------------	----------

Investigation of the bees of Pakistan is providing a better understanding of the classification, natural history, and zoogeography of these insects which play a significant role in the pollination of plants important to man.



ASTROPHYSICS AND EARTH SCIENCES

The study of astrophysics and earth sciences is the study of man's available energy and mineral resources. Studies of the stars and their origins reveal much about the origin, composition, behavior and fate of the Earth. The forces governing the stars are the same as those governing the star which is our Sun. The Earth was born of solar minerals, and the Sun remains the source of all energy, fossil or otherwise, available to man today. Uranium, for example, which provides the fuel for atomic power plants, is present in the Sun as well as in the Earth. Coal and oil are fossil remains of plants and animals which once relied on sunshine for life, just as all life does today.

Studies, like those listed below, which received Smithsonian Foreign Currency Program support in FY 1984 are contributing to knowledge essential to meet man's future energy and mineral needs, to understand and predict such natural phenomena as earthquakes, and to foster space age developments. Such projects help host nations, particularly the developing nations, improve their scientific output while providing United States institutions with collaborators, facilities or field research opportunities essential to the conduct of such studies, judged most likely to advance man's knowledge to his available energy and mineral resources.

<u>Institution</u>	<u>Principal Investigator</u>	<u>Obligation Number</u>	<u>\$ Eqv.</u>
<u>INDIA</u>			
72. Smithsonian Institution Washington, D.C.	G. Fazio	TX400866	\$4,699
Travel of Indian participant in a balloon borne far-infrared telescope program at the Center for Astrophysics at Cambridge, Massachusetts.			
73. Smithsonian Institution Washington, D.C.	K. Fredriksson	TX400398	\$3,764
Continuation of meteorite studies of the Lonar impact crater.			
74. U. of Maryland College Park, MD	M. Kundu	40179500	\$57,584
U.S. participation in the Second Indo-U.S. Workshop on Solar Terrestrial Physics.			
75. Massachusetts Inst. of Technology Cambridge, MA	P. Molnar	TX400091, -093, & -094	\$4,363

Development of a collaborative program of research on the deep structure and active tectonics of the Himalayas.

<u>Institution</u>	<u>Principal Investigator</u>	<u>Obligation Number</u>	<u>\$ Eqv.</u>
76. U. of Southern California University Park, CA	S. Prasad	41008300	\$6,360

Models of the chemical evolution of interstellar clouds are vitally important to an understanding of molecular cloud structure, star formation, and galactic. This collaborative project is the first to link the chemistry, heating and cooling, and hydrodynamic collapse of an interstellar cloud as it evolves toward star formation.

77. George Washington U. Washington, D.C.	E. Sabadell	TX400240 through 246 & 510	\$19,714
--	-------------	-------------------------------	----------

U.S. participation in the U.S.-India Workshop on Arid Zone Research, Jodhpur, January 1984.

78. Washington State U. Pullman, WA	P. Rosenberg	TX400105	\$5,865
--	--------------	----------	---------

New techniques for determination of uranium residence times are being developed in a collaborative program with the Physical Research Laboratory at Ahmedabad.

79. U. of Texas Austin, TX	V. Szebehely	TX400889	\$2,500
-------------------------------	--------------	----------	---------

Development of a collaborative program of research on the gravitational problem of three bodies.

80. U. of California Irvine, CA	V. Trimble	TX400851	\$1,506
------------------------------------	------------	----------	---------

U.S. participation in astrophysical workshops commemorating the Golden Jubilee of the Indian Academy of Sciences.

81. U. of Colorado Boulder, CO	M. Wyss	TX400525 & -526	\$4,376
-----------------------------------	---------	--------------------	---------

Development of a program of collaborative research in earthquake hazard and prediction.

#### PAKISTAN

82. U. of Nebraska Lincoln, NB	J. Shroder	TX400726	\$5,638
-----------------------------------	------------	----------	---------

Development of a program of collaborative geological field research on the Late Cenozoic intermontane basins of northern Pakistan.

### MUSEUM PROGRAMS

The scope of museum activities is growing and changing. The traditional museum role has been the care and preservation of scientific specimens and cultural objects for study and reevaluation as new techniques and data become available. Today museums also have a growing role belonging traditionally to universities. They also play a growing role in communication between present-day cultures, drawing together peoples of different lands when language barriers prevent exchange of basic information. Museums are now making more use of their skilled personnel and their collections for popular education. Increasingly, museums are broadening the interpretation of museum collections to include living cultural traditions such as crafts and the performing arts.

Projects like those listed below, which received Smithsonian Foreign Currency Program support in FY 1984, support both the traditional and the newer roles of museums. These projects respond to those needs of the museum profession not met within the natural sciences and cultural history areas of the Smithsonian Foreign Currency Program.

<u>Institution</u>	<u>Principal Investigator</u>	<u>Obligation Number</u>	<u>\$ Eqv.</u>
<u>INDIA</u>			
83. Asian Cultural Council (As Agent for Indo-U.S. Sub-commission on Education & Culture) New York, NY	T. Tanen	20494600 Amend. 3, 20854300 Amend. 2 & 3, 40579100 & 41009400 TX400351	\$390,226

Continuation of museum-related programs and exchanges under the Indo-U.S. Subcommission on Education and Culture.

84. American Association of Museums Washington, D.C.	E. Hersher	TX400606	\$2,000
--	------------	----------	---------

Travel of Dr. Grace Morley to the U.S. to participate in meetings of the American Association of Museums and to receive an award for distinguished service, June 1984.

85. Smithsonian Institution Washington, D.C.	C. Rose	TX400813	\$2,500
--	---------	----------	---------

Travel of Indian participant in the Sixth International Biodeterioration Symposium, at Washington, D.C., August 1984.

<u>Institution</u>	<u>Principal Investigator</u>	<u>Obligation Number</u>	<u>\$ Eqv.</u>
86. Smithsonian Institution Washington, D.C.	P. Seitel	TX400993 & -94	\$7,041

As part of the Festival of India in the U.S., the Smithsonian will present a major exhibition, Aditi: a Celebration of Life, featuring live folk artists and their crafts and performances.

87. Smithsonian Institution Washington, D.C.	W. Washburn	TX400228	\$2,580
---	-------------	----------	---------

Consultation with Indian scholars of the United States to enhance American studies programs in India.

88. Carnegie Museum of Natural History Pittsburgh, PA	D. Schlitter H. Genoways	TX300077 Amend. 1	\$283
--	-----------------------------	----------------------	-------

U.S. participation in a zoological collections management workshop at Calcutta.

SFCP GRANTS ADMINISTRATION

<u>Institution</u>	<u>Principal Investigator</u>	<u>Obligation Number</u>	<u>\$ Eqv.</u>
<u>BURMA</u>			
89. Smithsonian Institution Washington, D.C.		Transfer	\$10

Burmese kyats were transferred to the State Department for Foreign Affairs Administrative Support, the costs incurred by the State Department in providing administrative support to Foreign Currency Program grantees in the excess currency countries.

INDIA

90. Smithsonian Institution Washington, D.C.		Transfer	\$13,675
---	--	----------	----------

Indian rupees were transferred to the State Department for Foreign Affairs Administrative Support, the costs incurred by the State Department in providing administrative support to Foreign Currency Program grantees in the excess currency countries.

91. Smithsonian Institution Washington, D.C.		TX300156	\$8,924
---	--	----------	---------

This obligation supported inspection and audit of research projects and liaison with host country governments by Smithsonian staff and advisors.

92. Smithsonian Institution Washington, D.C.		30942400 Amend. 1	\$50,000
---	--	----------------------	----------

This obligation is for the development, conduct, and administration of Smithsonian/SFCP projects in India.

PAKISTAN

93. Smithsonian Institution Washington, D.C.		Transfer	\$66
---	--	----------	------

Pakistan rupees were transferred to the State Department for Foreign Affairs Administrative Support, the costs incurred by the State Department in providing administrative support to Foreign Currency Program grantees in the excess currency countries.



<u>Institution</u>	<u>Principal Investigator</u>	<u>Obligation Number</u>	<u>\$ Eqv.</u>
94. Smithsonian Institution Washington, D.C.		400494,-495, -498,-499, -901, & -902	\$19,196

This obligation supported inspection and audit of research projects and liaison with host country governments by Smithsonian staff and advisors.

SCIENCE INFORMATION PROGRAM FOR TRANSLATIONS

<u>Institution</u>	<u>Principal Investigator</u>	<u>Obligation Number</u>	<u>\$ Eqv.</u>
95. Science Information Program		ST302742	\$180,000

Indian rupees were obligated for translations of publications of priority interest to scholars conducting research in the natural sciences and cultural history.



SMITHSONIAN INSTITUTION LIBRARIES



3 9088 01681 1010